CLAIMS

1. (Original) A method of identifying an article of interest comprising

providing one of a plurality of RF antennas each having a non-linear element and being resonant at one of plurality of different frequencies positioned on an article of interest,

interrogating said one RF antenna with RF energy of a first frequency,

converting said interrogating RF energy into reflected RF energy of a different frequency from said first frequency, and

sensing said reflected RF energy and on the basis of said different frequencies determining if a specific said antenna is present.

2. (Original) The method of claim 1 including

said non-linear element is a rectifying diode.

3. (Original) The method of claim 2 including

said specific antenna is present and said different frequency being about double said first frequency.

4. (Original) The method of claim 1 including

said antenna assembly providing a half wave rectified sine wave from said interrogating RF energy.

5. (Original) The method of claim 4 including

said interrogating RF energy producing a sine wave.

6. (Original) The method of claim 4 including

said half wave rectified sine wave has a fundament Fourier series which is about double the frequency of said sine wave.

7. (Original) The method of claim 1 including

employing two said interrogating frequencies in determining if an article of interest is present.

8. (Original) The method of claim 7 including

employing a spectrum analyzer in analyzing said different frequency.

9. (Original) The method of claim 1 including

employing a binary analysis in determining if an article of interest is present.

10. (Original) The method of claim 7 including

employing a spectrum analyzer structured to monitor each interrogating frequency in determining if an article of interest is present.

11. (Original) The method of claim 9 including

employing said method to provide specific identification of the antenna if an article of interest is present.

12. (Original) The method of claim 1 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition.

13. (Original) The method of claim 1 including

said physical condition being a condition selected from the group consisting of pressure, temperature, pH, chemical concentrations and humidity, chemical environment, biological environment, radiation, and light.

14. (Original) The method of claim 12 including

employing as said non-linear elements a variable non-linear element.

15. (Original) Apparatus for determining if an article of interest is present comprising

said articles of interest having at least one antenna having one frequency of a plurality of available frequencies,

a non-linear element operatively associated with said antenna,

an RF frequency generator for directing RF energy of a particular frequency to said antenna,

a detector for receiving reflected RF energy which has impinged on said antenna, and

a processor for determining from said reflected frequency whether the antenna is a specific antenna.

16. (Original) The apparatus of claim 15 including

said non-linear element being a rectifying diode.

17. (Original) The apparatus of claim 15 including

said RF frequency generator being structured to produce interrogating RF energy in the form of a sine wave.

18. (Original) The apparatus of claim 17 including

said antenna being structured to produce a half wave rectified sine wave from said interrogating RF energy.

19. (Original) The apparatus of claim 18 including

said antenna being structured to provide said half wave rectified sine wave at a fundamental Fourier series component which is about double the frequency of said sine wave.

20. (Original) The apparatus of claim 16 including

said RF frequency generator being structured to provide at least two said interrogating RF frequencies.

21. (Original) The apparatus of claim 16 including

a spectrum analyzer for analyzing said different frequencies.

22. (Original) The apparatus of claim 16 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition.

23. (Original) The apparatus of claim 22 including

said physical condition being a condition selected from the group consisting of pressure, temperature, pH, chemical concentrations, humidity, chemical environment, biological environment, radiation, and light.

24. (Original) A method of monitoring a physical property comprising

providing an antenna having a non-linear element whose response depends on the physical property being monitored,

interrogating said RF antenna with RF energy of a first frequency converting the interrogating RF energy into reflected RF energy of a different frequency from said first frequency, and

sensing said reflected RF energy on the basis of said different frequencies to determine the state of said physical property.

25. (Original) The method of claim 24 wherein

said non-linear element is a rectifying diode.

26. (Original) The method of claim 25 wherein

said specific antenna is present and said different frequency being about double said first frequency.

27. (Original) The method of claim 24 including

said antenna assembly providing a half wave rectified sine wave from said interrogating RF energy.

28. (Original) The method of claim 27 including

said interrogating RF energy producing a sine wave.

29. (Original) The method of claim 27 including

said half wave rectified sine wave has a fundament Fourier series which is about double the frequency of said sine wave.

30. (Original) The method of claim 24 including

employing a spectrum analyzer in analyzing said different frequency.

31. (Original) The method of claim 24 including

employing a second non-linear element cooperating with said non-linear element to provide a determination regarding whether an article of interest is present.

32. (Original) The method of claim 24 including

said physical condition being a condition selected from the group consisting of pressure, temperature, pH, chemical concentrations and humidity, chemical environment, biological environment, radiation, and light.

33. (Original) Apparatus for monitoring a physical property comprising

an antenna having one frequency of a plurality of available frequencies

a non-linear element operatively associated with said antenna,

an RF frequency generator for directing RF energy at a particular frequency to said antenna,

a detector for receiving reflected RF energy which has impinged on said antenna, and

a processor for determining from said reflected frequency the state of the property being monitored.

34. (Original) The method of claim 33 including

said non-linear element being a rectifying diode.

35. (Original) The method of claim 33 including

said RF frequency generator being structured to produce interrogating RF energy in the form of a sine wave.

36. (Original) The method of claim 35 including

said antenna being structured to produce a half wave rectified sine wave from said interrogating RF energy.

37. (Original) The method of claim 36 including

said antenna being structured to provide said half wave rectified sine wave at a fundamental Fourier series component which is about double the frequency of said sine wave.

38. (Original) The method of claim 34 including

said RF frequency generator being structured to provide at least two said interrogating RF frequencies.

39. (Original) The method of claim 34 including

a spectrum analyzer for analyzing said different frequencies.

40. (Original) The method of claim 34 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition.

41. (Original) The method of claim 40 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition.